UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,916	12/10/2003	Eiji Iwanari	2018-819	6688

23117 7590 05/24/2007
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
HAMO, PATRICK	
ART UNIT	PAPER NUMBER
3746	
MAIL DATE	DELIVERY MODE
05/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/730,916	IWANARI, EIJI	
	Examiner	Art Unit	
	Patrick Hamo	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 13-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 13-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to amendments filed March 22, 2007.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant claims that the recess in the cover defines a receptacle *opening away* (emphasis added) from the armature that at least partially receives a bearing member. However, it is unclear what specifically is meant by the phrase "opening away" especially in light of the illustration in figs. 1, 9 and 10 in which the examiner can only interpret as the recess opening *toward* the armature 40, the gap in the cover to receive shaft 22 interpreted as the claimed opening. For purposes of examination, the examiner interprets the claim as defining the recess and opening as shown in figs. 1, 9 and 10.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-6, 13-18 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al., 6,082,974 in view of Moroto et al., 6,541,889.

Takemoto discloses the same invention substantially as claimed including: a rotor (4); a rotation shaft (3), which revolves integrally with the rotor; bearing members (4b, 8a), which support both axial ends of the rotation shaft; a stator (5), which is disposed on an outer circumference of the rotor and surrounds the rotor; a drawing force generative means (13) in the form of an impeller, which generates drawing force for drawing fuel from the fuel tank by means of rotation force of the rotor, wherein: the rotor has a recess (4a) in a center of its axial end portion; and at least one of the bearing members (4b) is disposed in the recess; the drawing force generative means has a rotation member (13), which rotates integrally with the rotor, and a case member (7), which houses the rotation member; the case member has a projecting portion (7d), which is disposed in the recess, between the bearing and the recess, and at least one part of the projecting portion projects toward the recess; and the projecting portion supports one of the bearing members (4b) by an inner periphery of the projecting portion; the rotor (4) and the drawing force generative means (13) are disposed to be overlapped in an axial direction of the rotor; the rotor (4) and the drawing force generative means respectively have stepped portions (formed between the bearings and the projection (7d) in the center of figure 1); and the rotor and the drawing force generative means are disposed to be overlapped so that the stepped portions oppose each other (see figure 1); the cover has a connective portion (projecting radially inward from 7c), which is disposed at a bottom of the recess and connected with the rotation shaft, and a cylindrical portion (7d), which extends from an outer periphery of the connective portion to an opening of the recess along the rotation shaft; and thickness of the connective portion is thicker

than thickness of the cylindrical portion (see figure 1); the position of the centroid of the rotor is positioned in the substantial center between the bearing members (see figure 1).

Takemoto does not disclose the following: the stator has a permanent magnet, which is disposed on its circumference and forms a plurality of magnetic poles the polar characters of which are alternated; the rotor includes an armature, which is rotatably disposed inside of the stator, and a commutator, which rotates integrally with the armature and has a plurality of segments respectively electrically connected with coils of the armature; and the armature has a cover, which covers one of axial end portions of the armature, and the recess is formed in the cover; the armature includes a plurality of bobbins arranged in the circumferential direction of the armature; and each bobbin is wound with a coil by way of concentrated winding; the armature includes a central core, which is disposed in the rotational center of the armature; a plurality of coil cores magnetically connected with the central core, the coil cores being different bodies from the central core and disposed in the outer circumference of the central core to be arranged in the circumferential direction thereof; a room around each bobbin to be wound with a coil is formed to be a trapezoidal shape that becomes smaller from the outer periphery to the rotational center of the coil core. Takemoto discloses a cover (7) that covers an axial end of the rotor in which the recess is formed, though the rotor does not include an armature and a stator with a plurality of coils (5a) disposed on its circumference and a rotor with a permanent magnet, though the alternating poles of the permanent magnet are not explicitly disclosed.

However, Moroto et al. teaches a DC motor that is easy to change connection of the armature coil, including a cylindrical yoke (2) with a plurality of permanent magnets (3) magnetized to alternately form N and S magnetic poles (column 2, lines 65-67). The yoke does not rotate and can therefore be called a stator. Inside the yoke is a rotor, including an armature (4) rotatably disposed inside the magnets that form the yoke (column 2, lines 62-63) and a commutator (8) that rotates with the armature (column 3, lines 1-3) and is comprised of six segments (8a) that connect to the armature coils (column 3, lines 55-56). Each armature coil (7) is wound around a bobbin (9), and the armature includes an armature core (6) connected to each armature coil (column 3, lines 7-9), coil cores (see figure 2b) that are different bodies from the central core (see figure 3a) and arranged in a circumferential direction thereof (see figure 3b), and each armature coil is wound around the body of the bobbin from the radially inside portion to the radially outside portion so that the number of turns of a portion of the armature coil at a more radially outside portion becomes larger to form a trapezoidal shape (column 3, lines 18-22). In effect, Moroto et al. teaches a motor that is the inverse of Takemoto's motor, in that the rotor includes the armature coils and the stator includes the permanent magnets instead of the rotor including the permanent magnets and the stator including the armature coils, with the added inventive step that it is easy to change the connection of the armature coil. If Takemoto's invention were to be modified with that of Moroto, the cover (7) that covers an axial end of the rotor would then also cover an axial end of the armature. Also, the inventive step of alternating the poles of the permanent magnet in Moroto's stator, or yoke, could be applied to Takemoto's rotor.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Takemoto's invention with that of Moroto in order to provide a fuel pump with a DC motor that simplified the changing of the connection to the armature coils.

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1-6 and 13-18 above in view of Harakawa et al., 6,461,120.

The references as applied to claims 1-6 and 13-18 and discussed above teach all of the limitations substantially as claimed except for the following: the drawing force generative means supplies the fuel into a space between the rotor and the stator in the axial direction.

However, Harakawa teaches a compressor with a passage between a stator 104 and a rotor 105, such that when a drawing force generative means 109 rotates, the working fluid is sprayed toward the stator and continues through the passage (col. 1, ll. 51-54) thereby effectively cooling the motor (col. 1, l. 54).

Therfore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the references as applied to claims 1-6, 13-18 and 22-23 above with the cooling passage of Harakawa in order to more effectively cool the motor.

Response to Arguments

Applicant's arguments filed March 22, 2007 have been fully considered but they are not persuasive.

In regards to applicant's argument that housing 7 of Takemoto is not a cover that covers the end of the armature, but a housing or case enclosing the rotor, the examiner contends that it is within reasonable interpretation that a housing that encloses a rotor also covers the rotor. Therefore, as claimed, the interpretation of housing 7 as a cover and the rejections resulting from this interpretation are maintained.

In regards to applicant's argument that neither Takemoto nor Moroto teach an arrangement that allows fuel to flow through a motor section, it is submitted that none of claims 1-6, 13-18 or 22-23 include limitations drawn to this arrangement, and therefore the argument is moot with respect to the claims that stand rejected under the combination of Takemoto and Moroto.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Hamo whose telephone number is 571-272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on 571-272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PH

ANTHONY D. STASHICK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700